

Listing of Claims:

1-35. Cancelled.

36. (Currently Amended) A system for ablating an interior tissue region of an organ or duct within a body of a patient comprising:

an ablation tool including an elongated antenna device electrically coupled to a coaxial transmission line that is electrically coupled to a source of microwave energy, the coaxial transmission line delivering microwave energy to the antenna device so as to effect ablation of a tissue region within the interior of the organ or duct, the coaxial transmission line including an inner conductor, an outer conductor and a dielectric medium disposed between the inner and outer conductors, the antenna device including an antenna that is coupled to a distal end of the inner conductor of the coaxial transmission line and an enclosure that encapsulates the antenna with a dielectric material; and

an introducer configured to carry at least a portion of the ablation tool, the introducer having a proximal end, a sharpened distal end for penetrating through a wall of the organ or duct, and at least one lumen which is sized and dimensioned for slidable receipt of at least the antenna device of the ablation tool therethrough, the antenna device being configured to be deployed into the interior of the organ or duct through the sharpened distal end of the introducer, wherein upon deployment the antenna device is straight and assumes a predetermined position an angular orientation relative to a longitudinal axis of the introducer, the angular orientation placing the straight antenna device in a direction towards the tissue region targeted for ablation and substantially parallel to an interior portion of the penetrated wall in order to allow a linear lesion to be produced at the tissue region of the penetrated wall which is targeted for ablation.

37. (Currently Amended) A system for ablating an interior tissue region of an organ or duct within a body of a patient comprising:

an ablation tool including an elongated antenna device electrically coupled to a coaxial transmission line that is electrically coupled to a source of microwave energy, the coaxial transmission line delivering microwave energy to the antenna device so as to effect ablation of a tissue region within the interior of the organ or duct, the coaxial transmission line including an inner conductor, an outer conductor and a dielectric medium disposed between the inner and outer conductors, the antenna device including an antenna that is coupled to a distal end of the

inner conductor of the coaxial transmission line and an enclosure that encapsulates the antenna with a dielectric material; and

an introducer configured to carry at least a portion of the ablation tool, the introducer having a proximal end, a sharpened distal end for penetrating through a wall of the organ or duct, and at least one lumen which is sized and dimensioned for slidable receipt of at least the antenna device of the ablation tool therethrough, the antenna device being configured to be deployed into the interior of the organ or duct through the sharpened distal end of the introducer, wherein upon deployment the antenna device assumes a predetermined position in a direction towards the tissue region targeted for ablation and substantially parallel to the tissue region targeted for ablation, The system of claim 36 wherein said ablation tool comprises a steering mechanism associated with the proximal end of the tool which, upon manipulation, is configured to cause at least a portion of the antenna device to assume an angular orientation relative to a longitudinal axis of the tool.

38. (previously presented) The system of claim 37 wherein said angular orientation is between about 0 and 90 degrees relative to the longitudinal axis of the tool.

39. (previously presented) The system of claim 37 wherein said angular orientation is between about 45 and 135 degrees relative to the longitudinal axis of the tool.

40. Cancelled

41. (Currently Amended) The system of claim 36 wherein said antenna device is preshaped to extend at an angle relative to a longitudinal axis of the introducer shaft of the device.

42. (previously presented) The system of claim 41 wherein said antenna device extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the shaft.

43. (previously presented) The system of claim 41 wherein said antenna device extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the shaft.

44. (previously presented) The system of claim 36 wherein said antenna device includes a biasing element which is configured to bias the antenna device into a preshaped angular orientation relative to a longitudinal axis of the tool.

45. (Currently Amended) The system of claim 44 wherein said biasing element comprises a NiTi ~~nitinol~~ wire.

46. (original) The system of claim 36 wherein said organ or duct comprises a beating heart.

47. Cancelled.

48. (withdrawn) The system of claim 36 wherein said ablation device is a radiofrequency probe.

49. (withdrawn) The system of claim 36 wherein said ablation device is a laser probe.

50. (withdrawn) The system of claim 36 wherein said ablation device is a cryosurgical probe.

51. (Currently Amended) The system of claim 36 wherein an outer diameter of the introducer ~~shaft~~ is less than about 3 mm.

52. (withdrawn) The system of claim 47 wherein the ablation device further comprises a microwave antenna which is electrically coupled to a transmission line, and a ground plane electrically coupled to the transmission line and positioned proximally to the antenna, wherein said ground plane is configured to couple electromagnetic energy between the antenna and the transmission line.

53. (previously presented) The system of claim 36 wherein said antenna device is configured to be positioned at least a short distance away from a tissue region to be ablated within an interior of the organ or duct of the body.

54. (withdrawn) The system of claim 36 wherein said distal end of the introducer is preshaped to extend at an angle relative to a longitudinal axis of the introducer.

55. (withdrawn) The system of claim 54 wherein said distal end of the introducer extends

at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the introducer.

56. (withdrawn) The system of claim 54 wherein said distal end of the introducer extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the introducer.

57. (Currently Amended) A microwave ablation device for ablating an interior portion of a wall of a beating heart, the microwave ablation device comprising

a probe configured to penetrate the wall of the beating heart, the probe having a proximal end portion and a distal end portion having a sharpened distal end; and

a microwave energy delivery portion carried within the probe and located proximate to the distal end portion of the probe, said sharpened distal end of said probe being configured to penetrate the wall of the beating heart to facilitate placement of the microwave energy delivery portion within an interior cavity of the beating heart, the microwave energy portion being configured to be deployed from the probe when placed within the interior cavity of the beating heart, the microwave energy portion also being configured ~~the~~ to match the shape of the interior portion of the wall and to linearly ablate the interior portion of the wall of the beating heart when deployed within the interior cavity of the beating heart.

58. (withdrawn) The device of claim 57 wherein said energy delivery portion comprises a microwave antenna which is located within said distal end portion of the shaft.

59. (withdrawn) The device of claim 57 wherein said energy delivery portion includes a needle microwave antenna.

60. (withdrawn) The device of claim 59 wherein an outer diameter of the needle antenna is less than about 3 mm.

61. (withdrawn) The device of claim 57 wherein said distal end portion of the device is preshaped to extend at an angle relative to a longitudinal axis of the shaft.

62. (withdrawn) The device of claim 61 wherein said distal end portion extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the shaft.

63. (withdrawn) The device of claim 61 wherein said distal end portion extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the shaft.
64. (withdrawn) The device of claim 57 wherein said distal end portion comprises a dielectric material which substantially surrounds the distal end portion.
65. (withdrawn) The device of claim 57 wherein a thickness of the dielectric material varies along a length of the distal end portion of the device.
66. (previously presented) The device of claim 57 wherein said microwave energy delivery portion is configured to be positioned at least a short distance away from a tissue region to be ablated within the interior of the organ or duct.
67. (previously presented) The device of claim 57 wherein said microwave energy delivery portion is configured to be positioned in contact with a tissue region to be ablated within the interior of the organ or duct.
68. (withdrawn) The device of claim 57 further comprising a conductive element which is coupled to the shaft at a spaced apart location from the energy delivery portion and which is configured to be positioned in at least close proximity to an outer wall of the organ or duct when the energy delivery portion is positioned inside the organ or duct.
69. (withdrawn) The device of claim 68 wherein the conductive element comprises a metallic strip.
70. (withdrawn) The device of claim 69 wherein the metallic strip is spaced-apart from the energy delivery portion at a distance of between about 1 to 15 mm.
71. (withdrawn) The device of claim 69 wherein the metallic strip is formed from a metallic foil.
72. (withdrawn) The device of claim 68 wherein the conductive element comprises a metallic wire.

73. (withdrawn) The device of claim 72 wherein the metallic wire is formed from silver.
74. (withdrawn) The device of claim 68 wherein the conductive element extends at an angle relative to a longitudinal axis of the shaft of the device.
75. (withdrawn) The device of claim 68 wherein the conductive element is arranged to attract an electric field generated by the energy delivery portion to provide a sufficiently high electric field proximate the energy delivery portion which is sufficient to effect ablation of tissue.
76. (previously presented) A microwave ablation device for effecting ablation of an interior tissue region within an organ or duct within a body of a patient, comprising
an elongated probe having a lumen that spans a proximal access end and an opposite distal penetration end of the elongated probe, the distal penetration end being adapted to penetrate a wall of the organ or duct; and
a microwave energy delivery means carried by the lumen of the elongated probe and including an antenna device and a coaxial transmission line, the coaxial transmission line including an inner conductor, an outer conductor and a first dielectric medium disposed between the inner and outer conductors, the antenna device including an antenna that is encapsulated by a second dielectric medium and that is coupled to the inner conductor of the coaxial transmission line, said distal penetration end being configured to penetrate a wall of the organ or duct to facilitate placement of the antenna device within the interior of the organ or duct, the antenna device and a portion of the outer conductor of the coaxial transmission line being deployed beyond the distal penetration end of the elongated shaft when the distal penetration end of the elongated shaft is positioned within the organ or duct.
77. (withdrawn) The device of claim 76 wherein said microwave energy delivery means comprises a needle microwave antenna.
78. (Currently Amended) An ablation device comprising:
an elongated shaft having a proximal end portion, a distal end portion, and a pre-shaped elongated energy delivery portion located proximate to the distal end portion ~~which is the configured to be positioned adjacent to or in contact with a tissue surface of an inner wall of a heart to effect ablation thereof, wherein said energy delivery portion is formed from~~ including a

shape memory material that facilitates bending when the energy delivery portion is deployed and that facilitates straightening when the energy delivery portion is undeployed relative to the elongated shaft, the shape of the elongated energy portion following the contour of an inner wall of a heart when in the deployed state so that the elongated energy portion~~that~~ substantially conforms to the inner wall of the heart when the elongated shaft is positioned through a penetration in a the wall of the heart.

79. (Currently Amended) The device of claim 78 wherein said shape memory material comprises NiTi ~~Nitinol~~.

80. (original) The device of claim 78 wherein the energy delivery portion further comprises a conductive layer overlying the shape memory material.

81. (original) The device of claim 80 wherein said conductive layer comprises silver plating.

82. (original) The device of claim 78 wherein said elongated energy delivery portion is pre-shaped to extend at an angle relative to a longitudinal axis of the shaft.

83. (original) The device of claim 82 wherein said energy delivery portion extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the shaft.

84. (original) The device of claim 82 wherein energy delivery portion extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the shaft.

85. (original) The device of claim 78 further comprising an introducer having a proximal end portion, a distal end portion having a sharpened distal end, and at least one lumen which is sized and dimensioned for slidable receipt of the ablation device therethrough.

86. (original) The device of claim 78 wherein the energy delivery portion comprises a microwave antenna.

87. (withdrawn) The device of claim 78 wherein the energy delivery portion has a sharpened distal end which is configured to penetrate through a wall of an organ or duct.

88. Cancelled.

89. (previously presented) The device of claim 78 wherein the energy delivery portion is configured to substantially conform to a tissue region surrounding a pulmonary vein.

90. (previously presented) The device of claim 78 wherein the energy delivery portion is configured to substantially conform to at least a portion of a lateral wall of the right atrium to treat typical or atypical atrial flutter.

91. (original) The device of claim 78 wherein the energy delivery portion is configured to be coupled to a source of microwave energy.

92. (withdrawn) The device of claim 78 further comprising a conductive element which is coupled to the shaft at a spaced apart location from the energy delivery portion and which is configured to be positioned in at least close proximity to an outer wall of the organ or duct when the energy delivery portion is positioned inside the organ or duct.

93. (withdrawn) The device of claim 92 wherein the conductive element comprises a metallic strip.

94. (withdrawn) The device of claim 93 wherein the metallic strip is spaced-apart from the energy delivery portion at a distance of between about 1 to 15 mm.

95. (withdrawn) The device of claim 93 wherein the metallic strip is formed from a metallic foil.

96. (withdrawn) The device of claim 92 wherein the conductive element comprises a metallic wire.

97. (withdrawn) The device of claim 96 wherein the metallic wire is formed from silver.

98. (withdrawn) The device of claim 92 wherein the conductive element extends at an angle relative to a longitudinal axis of the shaft of the device.

99. (withdrawn) The device of claim 92 wherein the conductive element is arranged to attract an electric field generated by the energy delivery portion to provide a sufficiently high electric field proximate the energy delivery portion which is sufficient to effect ablation of tissue.

100. (previously presented) An ablation assembly, comprising:

a probe for introducing a longitudinal energy delivery member into a cavity of an organ, the longitudinal energy delivery member being deployed within the cavity of the organ via the probe when the probe has percutaneously penetrated through a wall of the organ, the longitudinal energy delivery member being configured to conform to an inner wall of the organ when deployed inside the cavity of the organ so as to produce a substantially linear lesion on the inner wall of the organ when energy is delivered to the longitudinal energy delivery member.

101. (previously presented) The ablation assembly as recited in claim 100 wherein when deployed the longitudinal energy delivery member assumes an angular position that places the longitudinal energy deliver member substantially parallel to the inner wall of the organ such that each longitudinal portion of the longitudinal energy deliver member is substantially equidistant from the inner wall of the organ.

102. (previously presented) The ablation assembly as recited in claim 100 wherein the ablation assembly is a microwave ablation assembly, and wherein the longitudinal energy delivery member is a microwave antenna device including an antenna that is encapsulated by a dielectric medium.

103. (previously presented) The ablation assembly as recited in claim 102 wherein the microwave antenna is electrically coupled to a coaxial transmission line that is electrically coupled to a microwave energy source.

104. (previously presented) The ablation assembly as recited in claim 103 wherein the microwave antenna is directly or indirectly coupled to the coaxial transmission line.

105. (New) The ablation device as recited in claim 78 wherein the elongated shaft is arranged for slidably carrying the energy delivery portion from an un-deployed position, which places the energy delivery portion inside the elongated shaft, to a deployed position, which places the energy delivery portion past the distal end portion of the elongated shaft, and wherein the energy delivery portion is configured to produce a concentrated directional electromagnetic field to a side that is placed adjacent to or in contact with a tissue surface of the inner wall of the heart in order to produce a linear lesion at the inner wall of the heart.

106. (New) The ablation assembly as recited in claim 103 wherein the coaxial transmission line delivers microwave energy to the antenna so as to effect ablation of a tissue region within the cavity of the organ, the coaxial transmission line including an inner conductor, an outer conductor and a dielectric medium disposed between the inner and outer conductors, the antenna being coupled to a distal end of the inner conductor of the coaxial transmission line.

107. (New) The ablation assembly as recited in claim 106 wherein the probe is formed from a conductive material and wherein the outer conductor of the coaxial transmission line electrically contacts the probe.

108. (New) The ablation assembly as recited in claim 107 wherein the microwave antenna device including the antenna and the dielectric medium that encapsulates the antenna extends distally further than the outer conductor of the coaxial transmission line, and wherein the microwave antenna device and a portion of the outer conductor of the coaxial transmission line extends out a distal end of the probe when the microwave antenna device is deployed within the cavity of the organ.

109. (New) The ablation assembly as recited in claim 108 wherein microwave antenna device and a portion of the exposed outer conductor of the coaxial transmission line are covered by a layer of dielectric material.

110. (New) The ablation assembly as recited in claim 100 wherein the longitudinal energy delivery member is sized and dimensioned for slidable receipt within a lumen of the probe such that only the longitudinal energy delivery member fits within the lumen of the probe.